

## Geriatric Oncology: Past, Present, Future

Arati V. Rao, MD, Arti Hurria, MD, Gretchen Kimmick, MD, Sandro Pinheiro, PhD, and Pearl H. Seo, MD, MPH

Duke University Medical Center, Durham, NC; City of Hope, Duarte CA; Miller School of Medicine, University of Miami, Miami, FL

During the last few years, the term “geriatric oncology” has received a lot of attention within the medical oncology community. This is due to recognition of the fact that the population of the United States is aging, and by the year 2030, 20% of the population will be older than 65 years of age, with those 85 years and older (ie, “the oldest old”) encompassing the most rapidly growing group.<sup>1</sup> It is now well recognized that cancer is a major problem for older individuals. It is the second leading cause of death after heart disease in the United States and the leading cause of death among those 60 to 80 years of age.<sup>2</sup> Overall, age represents the single most important risk factor for developing cancer. Approximately 60% of all newly diagnosed malignant tumors and 70% of all cancer deaths occur in persons 65 years or older, according to the Surveillance, Epidemiology and End Results Program at the National Cancer Institute (NCI).<sup>3</sup>

One of the first symposia conducted by the NCI and the National Institute on Aging presented in 1983, entitled “Perspectives on Prevention and Treatment of Cancer in the Elderly,” set the tone for further discussions and research in this area.<sup>4</sup> This conference was attended by now-known pioneers in the field of geriatric oncology, who addressed a number of important issues, including: (1) existing discrepancies between physiologic and chronologic age; (2) changes in age structure of the nation’s population and cancer control in the elderly; (3) the role of cancer prevention and treatment in older adults; and (4) approaches to increase our knowledge base in geriatric oncology by analyzing existing databases, conducting prospective clinical trials, initiating epidemiologic and longitudinal studies, evaluating the pharmacokinetics and chemosensitivity of drugs in older patients with cancer, evaluating and optimizing quality of life in older adults with cancer, and evaluating physician performance measures. The biology of aging and cancer was also discussed, and an increase in research using an interdisciplinary team approach was recommended.

ASCO has played a pivotal role in promoting the field of geriatric oncology, and its efforts are summarized in Table 1. In his 1988 ASCO Presidential address, B.J. Kennedy, MD,<sup>5</sup> one of the fathers of the emerging field of geriatric oncology, encouraged all medical oncologists to better understand and study aging and cancer. He urged that care of the older person needs to be part of medical education and oncology training, with research to help improve quality of life and decrease morbidity in this population. During the subsequent

**Table 1. Role of ASCO in Promoting Geriatric Oncology**

2000: Sponsored a clinical practice forum in geriatrics oncology during ASCO Annual Meeting
2002: Symposium entitled, “Cancer Care in the Older Patient” during ASCO Annual Meeting
2004: “Special Topics on Geriatric Oncology” Special session during ASCO Annual Meeting
2006: Established a heading of “geriatrics oncology” under which 4,407 abstracts were submitted for the ASCO Annual Meeting
2006: “Geriatric Oncology Panel Discussion: Clinical Research and Future Directions”
2006: Developed written guideline update on the use of white blood cell growth factors; recognized older individuals as a group at high risk
2007: Inaugural B. J. Kennedy Award and Lecture for Scientific Excellence in Geriatric Oncology

years, the ASCO Annual Meetings have included a number of educational sessions and oral presentations emphasizing geriatric oncology on topics such as the impact of comorbidity on cancer prognosis and treatment, the impact of age on the pharmacokinetics and pharmacodynamics of various chemotherapeutic drugs, the role of polypharmacy and drug interactions, under-representation of older patients in clinical trials, the adverse outcomes of inadequate dosing, and the role of supportive care in both curative and palliative therapy. The use of comprehensive geriatric assessment and quality of life has also been emphasized with the reporting of results in a number of disease-specific trials (eg, breast cancer or acute myeloid leukemia in older adults). *Journal of Clinical Oncology* has also published a number of articles pertaining to geriatric oncology, with a recent issue dedicated specifically to reviews in geriatric assessment in the older cancer patient.<sup>6</sup> ASCO has also awarded funding for training of oncology fellows and to support faculty development in an attempt to promote career development and research in the field of geriatric oncology.

Other organizations committed to geriatric oncology include the International Society of Geriatric Oncology, which has established task forces to evaluate the current geriatric oncology literature and make treatment recommendations;<sup>7</sup> and the Geriatric Oncology Consortium, which was founded to initiate clinical trials and raise awareness of problems in older adults with cancer. In addition, the National

Comprehensive Cancer Network has published practice guidelines for senior adult oncology.<sup>8</sup> In 1995, a cooperative research group, the Cancer and Leukemia Group B, organized a Cancer in the Elderly Committee, whose members have interest in cancer in older individuals. This group continues to meet and their activity has led to a number of completed and published studies regarding older individuals' barriers to participation in clinical trials, supportive care, and cancer therapeutics. During the last 15 years, the medical literature concerning cancer and aging has grown rapidly, with currently more than 10,000 citations listed in MEDLINE.

Regarding education, in 1992, the first textbook in the field, *Geriatric Oncology*, was published by Lodovico Balducci et al,<sup>9</sup> and has been followed by others. In addition, the need to train a future generation of geriatric oncologists has been identified. With the urging of John Bennett, MD, and others, the ASCO Geriatric Oncology Fellowship program was developed as a pilot program to support fellowship trainees with funding from the John A. Hartford Foundation. Ten institutions (Table 2) were identified and the American Board of Internal Medicine approved a 3-year combined fellowship training program in medical oncology and geriatrics. A curriculum was designed and instituted at the ten institutions (Table 3). In 2006, a summary of this pilot program revealed 28 fellows who were in the process of receiving or had completed training in geriatrics oncology. Eighteen percent of the fellows were recruited to an oncology fellowship program from a geriatrics program and 82% fellows were recruited directly from internal medicine residencies. Forty percent of fellows were in a 3-year geriatric oncology-integrated curriculum program and 60% were in a sequential geriatrics then oncology (or vice-versa) 3-year curriculum program.

Of greater interest, the need to educate all medical oncology fellows about care of elderly patients has been recognized. The American Board of Internal Medicine Medical Oncology board certification examinations include specific questions in geriatric oncology and there is a separate section on geriatric cancer within the *Oncology Medical Knowledge Self-Assessment Program* textbook. The Accreditation Council for Graduate Medical Education guidelines for Hematology Oncology fellowships include developing competence in the "care and management of the geriatric patient with malignancy and hematologic disorders."<sup>10</sup> However, trainees may complete medical oncology fellowships without any formal exposure to geriatrics-related content or experiences.

Recently, a Consensus Conference on developing core curricula in geriatrics for medical oncology fellows was conducted at Duke University, and was funded by the Donald W. Reynolds Consortium for Faculty Development to Advance Geriatric Education. Conclusions at the end of the 2-day conference included recommendations for (1) a needs assessment for geriatric oncology curriculum by surveying medical oncology program directors about the

**Table 2. Recipients of the ASCO-Hartford Foundation Geriatrics/Oncology Training Program Development Grant**

Boston Medical Center
Duke University Medical Center
Johns Hopkins University
Northwestern University
University of California, Los Angeles
University of Chicago
University of Colorado, Health Sciences Center
University of Michigan
University of Rochester
University of Texas

availability and integration of geriatric oncology training for their fellows; (2) assessing the previous ASCO-Hartford geriatric oncology pilot training program with a survey of all 28 fellows who have been trained thus far with an aim to understand the strengths and weaknesses of their geriatric oncology fellowship training (it is anticipated that this survey will provide information regarding their education and training curriculum, research activities during fellowship, mentorship in geriatrics and oncology, receipt of research funding, current practice choices and environment); and (3) application for funding to conduct a larger conference consisting of leaders in geriatric oncology, recently trained geriatric oncology fellows, and current fellows enrolled in a geriatrics oncology fellowship or fellows interested in this field. The ultimate goal of this conference would be to further

**Table 3. Proposed Curriculum for Fellows Enrolled in a Dual Geriatrics-Oncology Training Program**

Curriculum	Days
Ambulatory experience	270
Medical oncology clinic ½ day per week during 3 years	75
Radiation/gynecology oncology clinic ½ day per week	30
Geriatric Clinic ½ day per week during 3 years	75
Neuropsychiatry experience	30
Rehabilitation	30
Nursing home	30
In-patient experience	270
Hematology-oncology ward duties and consults	180
Bone marrow transplantation	30
Hospice/palliative care	30
"Acute care for the elderly" unit	30
Research experience	540

develop core curricula in geriatrics for medical oncology with the integration of certain key modules that include:

- Evidence-based guidelines for management of common cancers in older adults
- Solid tumors (breast, lung, colon, and prostate)
- Hematologic malignancies (acute myeloid leukemia, and lymphoma)
- Pharmacology of cancer therapy in older adults
- Biology and physiology of aging and cancer
- Assessment of the older cancer patient: life expectancy and functional reserve
- Optimizing treatment outcomes in older adults with a focus on supportive care in both the curative and palliative settings

The early leaders in the field of geriatric oncology have laid the framework, and the present generation of dual geriatrics

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and medical oncology-trained investigators continue to strengthen it. However, it will be future medical oncologists, fully educated about care of the older cancer patient, who will continue to develop this field pursuing basic, clinical, and translational research in order to improve survival, decrease toxicity, and improve overall quality of life of the older patient with cancer. Efforts to integrate geriatric oncology principles in the training of all medical oncologists are underway.

*Corresponding author: Arati V. Rao, MD, Duke University Medical Center, 111G, 508 Fulton Street, Durham, NC 27710; e-mail: rao00012@mc.duke.edu.*

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